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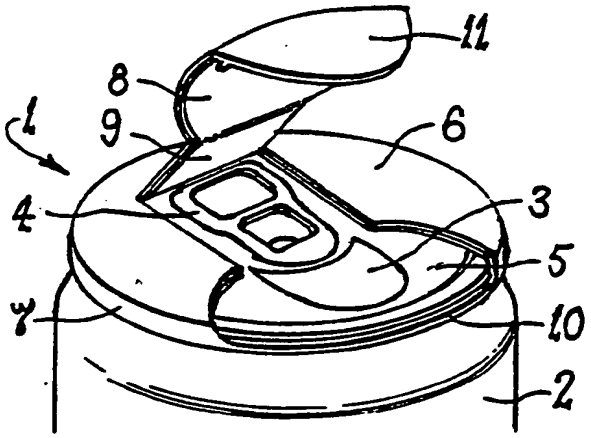

(57) Abstract

A can protector (1) for a drink can (2) which has an openable hole (3) and a hole-opening device (4) on its top surface (5) comprises a cover (6), retaining means (7, 10), one or more access openings (8, 9) allowing access to the hole (3), and closure means (8, 9) for covering or uncovering the hole (3). The arrangement is such that the can protector (1) does not need to be removed from the can (2) in order to open the hole (3), and the protector can be used to cover or uncover the hole at will, by closing the closure means (8, 9) or rotating the protector (1), thus ensuring both that the top surface of the can is hygienically protected and that insects cannot enter the can.

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A CAN PROTECTOR

This invention relates to a can protector. It relates particularly to an openable can protector for use on the top of a drink can.

Aluminium and steel cans are in widespread use in the packaging of drinks, particularly carbonated beverages.

Drink cans normally have a sealed hole on the top surface, and access to the drink is obtained by breaking the seal and opening the hole. Some years ago, the most common form of drink can included a metal ring on the top surface of the can. The can was opened by raising the ring, placing a finger inside, and pulling the ring away from the top surface, taking with it a portion of the top surface and leaving a hole. However, this type of can is now considered environmentally unsound because of the pollution created by discarded rings.

A few years ago, the "pop top" can was quite common. This type of can had two raised circular portions on its top surface, each surrounded by a seal. The can was opened by depressing the raised portions, breaking the seals and creating two holes in the surface of the can. The raised portions remained attached to the top surface of the can, so that pollution was avoided. One of the holes acted as an air hole, and the other hole was the hole through which drink was dispensed.

The form of can that is now most common has a ring on its top surface and a portion which is surrounded by a seal. When the ring is raised, it acts as a lever and depresses the surrounded portion, breaking the seal and forcing the surrounded portion into the can, creating a hole. The surrounded portion remains hingedly attached to the top surface of the can.

There are presently two major problems with the use of cans. The first problem is that the top surface of a can is exposed in transit between the manufacturer and the consumer, so that there is no way of ensuring that the top surface is hygienically clean when a consumer's mouth is applied to it. The second problem is that, once the

top of the can has been opened, there is no convenient way of re-closing the hole, so that insects may enter the can if the entire contents of the can are not consumed immediately. European wasps have been known to cause serious injury when swallowed together with the contents of a can which has been left unattended.

Australian Patent Application 25880/88 describes a beverage container closure which is designed to overcome the second problem. The closure disclosed comprises a disc with a hole in it, matching the hole in the top surface of a can. The disc is placed on the can after the can has been opened, and the hole in the top surface of the can can be closed when desired by rotating the disc. However, the closure disclosed does not overcome the first problem, being the lack of certainty surrounding the hygiene of those parts of the can which come in contact with a drinker's mouth, because the closure is not suitable for installation on a can at the time of filling the can; instead, the closure is installed by the consumer after the can has been opened. The closure of Australian Patent Application 25880/88 may in fact contribute to the spread of germs because the rotation of a closure pressed against the top surface of a drink can may urge foreign matter located on the surface into the can, or liquid from the can may seep between the top surface and the closure, combining with pollutants before being ingested by a drinker. Further, rotation of the tab on the top surface of the can as required by the closure may result in the breaking or scraping off of small pieces of aluminium from the tab or top surface, presenting an additional health risk to consumers.

According to the present invention, there is provided a can protector for a drink can which has an openable hole and a hole opening device such as a pull-tab on its top surface, the protector comprising:

(a) a cover designed to cover the top surface of the can;

(b) retaining means, for holding the cover over

the top surface of the can;

(c) one or more access openings, allowing access to the openable hole and hole opening device on the top surface of the can without removing the protector from the can; and

(d) closure means, for covering or uncovering the hole in the top surface of the can as required.

It is preferred that there be a single access opening which is formed by the raising of an openable area in the cover. The openable area may also form the closure means.

In a preferred arrangement incorporating an openable area, the openable area is large enough to expose both the openable hole and the hole opening device on the can top surface at the same time. It is preferred in this arrangement that the openable area be capable of opening and closing in two stages, a first stage covering the hole and a second stage covering the hole-opening device, such that both the first and second stages are opened to allow for opening of the can, whereafter the second stage is opened or closed to allow or deny access to the hole as required.

In an alternative arrangement, an access opening may allow access to either the openable hole or the hole opening device, but not both, at any one time, so that the can is opened by opening the access opening, rotating the protector to expose the hole opening device, using the hole opening device to open the hole, and rotating the protector to expose the hole. The hole may then be opened or closed as required by further rotation of the protector or by opening and closing the access opening.

The invention will hereinafter be described in greater detail by reference to the attached drawings which show an example form of the invention. It is to be understood that the particularity of those drawings does not supersede the generality of the preceding description of the invention.

Figure 1 is a perspective view of a first

embodiment of the invention showing the protector incorporating a two-stage openable area in a closed orientation.

Figure 2 is a perspective view of the embodiment of Figure 1 showing both the first and second stages in an open orientation.

Figure 3 is a perspective view of the protector of Figure 1 showing the second stage closed and the first stage open.

Figure 4 is a cross-sectional side view taken along the line IV-IV in Figure 1.

Figure 5 is a cross-sectional side view taken along the line V-V in Figure 1.

Figure 6 is a cross-sectional side view taken along the line VI-VI in Figure 1.

Figure 7 is a front perspective view of a second embodiment of the invention.

Figure 8 is a rear perspective view of the protector of Figure 7.

Figures 9a to 9f are partial cross-sections of the protector of Figure 7, showing alternative shapes for the retaining means.

The can protector 1 illustrated in Figures 1 to 6 is suitable for use on a drink can 2 which has an openable hole 3, and a hole opening device 4, on its top surface 5. The hole opening device 4 shown is a pull tab.

The can protector 1 comprises a cover 6 which is designed to cover top surface 5 of can 2. Side walls 7 act as retaining means to hold cover 6 on can 2. Cover 6 has an access opening defined by a two-stage openable area 8,9. First stage 8 can be opened to expose hole 3 (as shown in Figure 3), and second stage 9 which can be opened to expose hole opening device 4 (shown in Figure 2). Once hole 3 has been opened by device 4, second stage 9 can be left closed and first stage 8 can be opened or closed to allow or deny access to hole 3 as required.

The cover 6 may be of any suitable shape and configuration. In the embodiment illustrated in Figures 1

to 6 the cover is substantially disc-shaped, but it may be of any other shape provided that it achieves the function of covering the top surface of the can.

Side walls 7 may be of any suitable shape and configuration. It is preferred that side walls 7 be substantially continuous around the periphery of the cover, although in some embodiments they may be discontinuous. The principal function performed by side walls 7 is to retain cover 6 on drink can 2. To this end, it is preferred that side walls 7 include inward projections 10 which sit under the top rim of can 2 and thus resist removal of can protector 1 from can 2. Inward projections 10 may be discontinuous teeth of the type suggested in Figure 9, or they may comprise a single continuous tight-fitting band of the type illustrated in Figures 1 to 6, or a combination of teeth and a band.

Although can protector 1 may be rotatable about the top of can 2, it is preferred in this embodiment that can protector 1 be fixed relative to can 2 and orientated such that first stage 8 is located above hole 3 and second stage 9 is located above hole opening device 4.

First stage 8 may be of any suitable shape and configuration. As shown in the drawings, it is preferred that first stage 8 be slightly larger than the area of the can surface normally contacted by a consumer's lips. This allows a consumer to drink normally when first stage 8 is open as shown in Figure 3. It is preferred that first stage 8 includes bottom lip protector 11 extending downwardly from side walls 7. When first stage 8 is closed, bottom lip protector 11 protects the area of the can which is contacted by the consumer's bottom lip when the contents of the can are being consumed.

It is preferred that, for the portion of walls 7 which coincide with the periphery of first stage 8, band 10 be separable from the rest of walls 7 and bottom lip protector 11. This permits band 10 to remain in place, holding the can protector firmly on the can, even when first stage 8 is open. Accordingly to an optional

refinement illustrated in Figure 6, there is a gap between the top of band 10 and the top rim of can 2 in the vicinity of first stage 8, and rib 17 on the inside of bottom lip protector 11 fits resiliently into the gap when first stage 8 is closed, thus providing a snap-closure effect.

As an optional refinement, it is preferred that attachment means 12a, 12b be provided on first stage 8 and on some other portion of cover 6, allowing the openable area to be retained in an open position. Attachment means 12a, 12b may be any suitable known attachment means such as velcro or a co-operating projection and hole.

Second stage 9 may be of any suitable shape and configuration. In the embodiment illustrated second stage 9 is in its preferred substantially rectangular shape. Second stage 9 may be independent of first stage 8, but it is preferred that stages 8 and 9 be contiguous and it is further preferred that second stage 9 be accessible only after first stage 8 has been opened. In the embodiment illustrated, first stage 8 is connected via membrane hinge 13 to second stage 9 which in turn is connected by membrane hinge 14 to the rest of cover 6.

It is preferred that first and second stages 8 and 9 both be reclosable. Reclosing may be effected by any suitable means, and one suitable means is illustrated in Figures 4 and 5. In the embodiments illustrated in Figures 4 and 5 the outer edges of stages 8 and 9 fit within grooves in corresponding edges of surrounding parts of cover 6, ensuring that stages 8 and 9 snap back into place when they are closed. Numerous other known ways of achieving snap closure may be used.

As an optional further refinement, a thin plastic membrane may be placed over the edges of stages 8 and 9, and this membrane may be broken as stages 8 and 9 are opened for the first time. In some embodiments, a membrane of this type may be useful in ensuring that the can protector is watertight before it reaches the consumer, so that water or other liquids do not accumulate

between the protector and the top surface of the can.

As a further preferred refinement, downwardly projecting skirt 16 may be provided on the underside of cover 6 surrounding stages 8 and 9. Skirt 16 prevents dirt and insects from migrating under cover 6 when one or both of stages 8 and 9 are open.

An outwardly projecting tab may be provided on part of stage 8 or bottom lip protecting area 11 to provide leverage for a consumer opening the can protector for the first time.

Figures 7 and 8 illustrate an alternative embodiment of the invention. In this embodiment, can protector 1 comprises cover 6, retaining means which includes walls 7, an access opening defined by openable area 18, and closure means, defined by parts of cover 6 other than openable area 18.

Openable area 18 allows access to either the hole or the hole opening device on the can top surface, but not to both, at any one time. The can is opened by opening openable area 18, rotating protector 1 until the hole opening device on the can top surface is exposed, using the hole opening device to open the hole, and rotating protector 1 to expose the hole. The hole may thereafter be covered or uncovered by rotating protector 1 or by closing openable area 18.

Openable area 18 may be wholly within cover 6, but it is preferred that openable area extend to the edge of cover 6. It is especially preferred that cover 6 be substantially disc-shaped, with openable area 18 being in the shape of a sector of the disc and including those parts of side walls 7 which depend from the arc of the sector.

Prior to opening, openable area 18 may be attached to the rest of protector 1 by any suitable means. In a preferred embodiment, the openable area is made integrally with the rest of the protector, but separated by perforations 19, allowing openable area 18 to be partially or completely torn off. In other embodiments, the

openable area may be attached to the rest of the protector by means of slide fasteners, magnets, or any other suitable sealing means.

Although it is possible to provide for opening of the access opening by means of completely removing openable area 18 from the rest of protector 1, it is preferred that openable area 18 remain hingedly attached by means of hinge 20 to the rest of the protector after opening so that the openable area does not get discarded and cause pollution.

It is preferred that the retaining means comprise inward projections 21 as well as side walls 7, to assist in holding the protector on the top of a drink can. Inward projections 21 preferably comprise either an inwardly projecting ridge or inwardly projecting teeth, on the inside surface of side walls 7 of protector 1. The inward projections are configured such that they sit beneath a lip on the edge of a drink can, tending to prevent the protector from being removed, although in this embodiment allowing the protector to be rotated.

If inward projections 21 comprise teeth, those teeth may be of any suitable shape and configuration and they may be arranged at any suitable intervals around the inside surface of the side walls. Some suitable shapes are illustrated in Figures 9a to 9f.

It is further preferred that, at one location around side walls 7, there be provided a downwardly extending region 11 of side walls 7. Downwardly extending region 11 is designed to cover the area of the drink can contacted by a person's lower lip, in order to preserve the hygienic nature of that area. Downwardly extending region 11 may be provided opposite openable area 18, so that, when the protector is rotated into position to cover the hole, the lip-contacting portion of the can is covered by the downwardly extending region. In an alternative arrangement (not shown), downwardly extending region 11 may be provided as part of openable area 18, rather than on the opposite side. In another alternative arrangement,

two downwardly extending regions 11 are provided, one on openable area 18 and the other on the opposite side.

Another preferred feature is a rib or bead 22 on the surface of cover 6, the rib being substantially circular and located near the periphery of the cover. The purpose of rib 22 is to facilitate stacking of cans by preventing slippage. The rib may be continuous around cover 6 or it may be broken. A groove in the surface of cover 6 may be provided as an alternative to the rib.

Downwardly projecting skirts (not shown) may be provided on the underside of the protector around openable area 18. The purpose of such skirts, which are preferably resilient, is to prevent insects crawling between the top surface of the can and the undersurface of the protector once openable area 18 has been opened.

The protector may be made from any suitable material or materials. Although it is possible for the openable area to be made from a material which differs from that used for the rest of the protector, it is preferred that the materials be the same. Although various types of metal are suitable, it is preferred that a plastic material be used, with recycled plastics being especially preferred.

As alternative materials, the protectors may be made out of suitably processed vegetable materials. One suitable material is rice hulls which may be boiled and mixed with a non-toxic glue to provide a hardenable substance which can be placed in moulds and hardened to the appropriate shape. Other vegetable matter such as stubble forms suitable substitutes for rice hulls. The advantage of the use of vegetable matter is that the product produced will be biodegradable and environmentally harmonious. The used product is suitable for use as compost and toxic chemicals are not involved in its production.

It is preferred that the protector of the present invention be mounted on a drink can at the time the can is filled or shortly thereafter, thus maximising the

protector's hygienic effect. However, the protector, particularly when made according to the embodiment illustrated in Figures 7 and 8, may be sold separately from the drink can, and mounted on the drink can by the consumer.

It is to be understood that various alterations, additions and/or modifications may be made to the parts previously described without departing from the ambit of the invention.

CLAIMS

1. A can protector for a drink can which has an openable hole and a hole opening device such as a pull-tab on its top surface, the protector comprising:

(a) a cover designed to cover the top surface of the can;

(b) retaining means, for holding the cover over the top surface of the can;

(c) one or more access openings, allowing access to the openable hole and hole opening device on the top surface of the can without removing the protector from the can; and

(d) closure means, for covering or uncovering the hole in the top surface of the can as required.

2. A can protector according to claim 1 wherein there is a single access opening which is formed by the raising of an openable area in the cover, and the openable area also forms the closure means.

3. A can protector according to claim 2 further comprising means for holding the openable area in an open position.

4. A can protector according to claim 2 or claim 3 wherein the openable area can be opened to expose both the openable hole and the hole opening device on the can's top surface at the same time.

5. A can protector according to claim 4 wherein the openable area can be opened and closed in two stages, a first stage covering the openable hole and a second stage covering the hole-opening device, such that both the first and second stages are opened to allow for opening of the can, whereafter the second stage is closed and the first stage is opened or closed to allow or deny access to the hole as required.

6. A can protector according to claim 1 wherein there is one access opening which allows access to either the openable hole or the hole opening device, but not to both, at any one time, and the can is opened by opening the access opening, rotating the protector to expose the hole opening device, using the hole opening device to open the hole, and rotating the protector to expose the hole.

7. A can protector according to claim 6 wherein the closure means is provided by a part of the cover other than the access opening, so that the hole is covered or uncovered by rotating the protector rather than by closing the openable area.

8. A can protector according to claim 6 wherein the access opening is formed by the raising of an openable area in the cover, and the openable area also forms the closure means.

9. A can protector according to any one of claims 1 to 8 further including a skirt projecting downwardly from the underside of the cover around the periphery of the one or more access openings, in order to prevent insects or dirt entering the space between the can top surface and the cover.

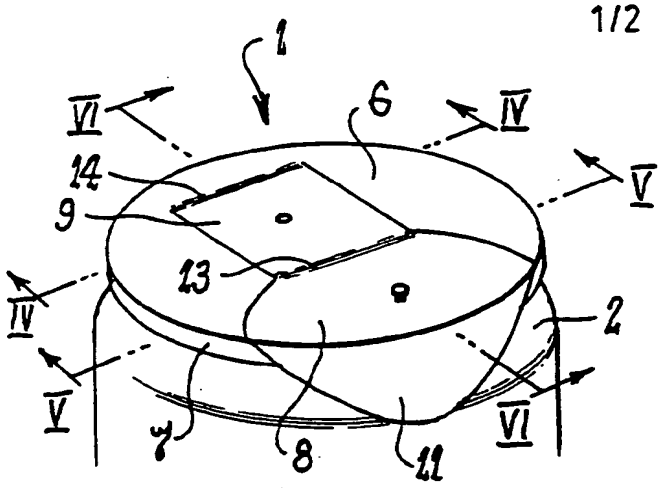

FIG 1

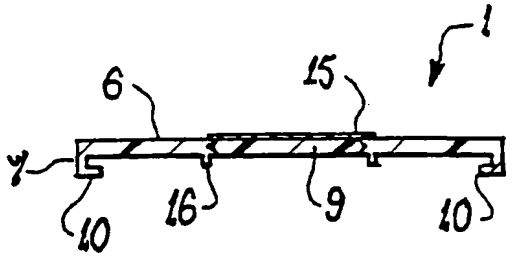

FIG 4

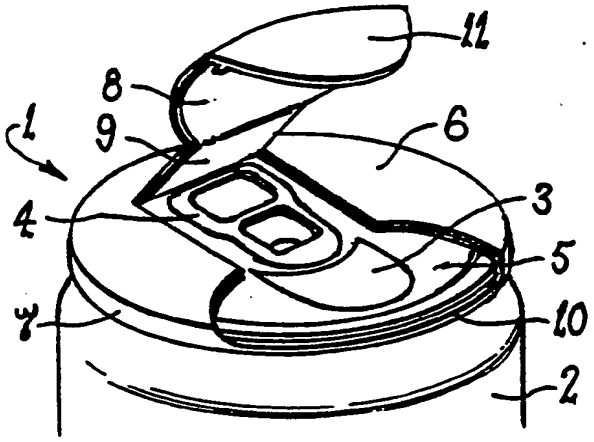

FIG 2

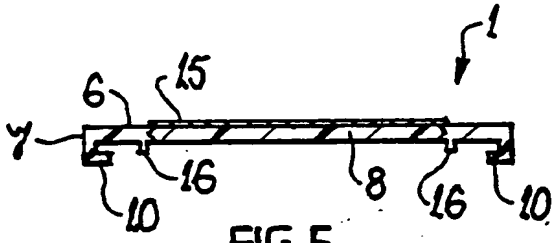

FIG 5

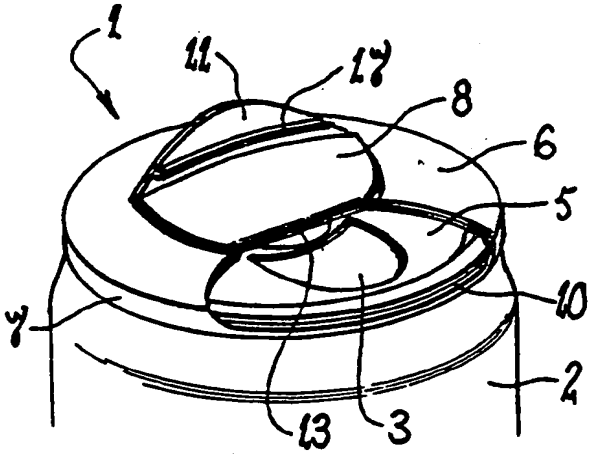

FIG 3

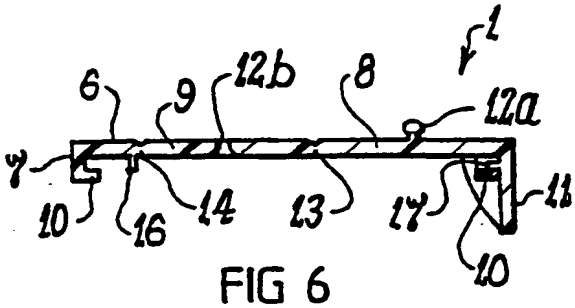

FIG 6

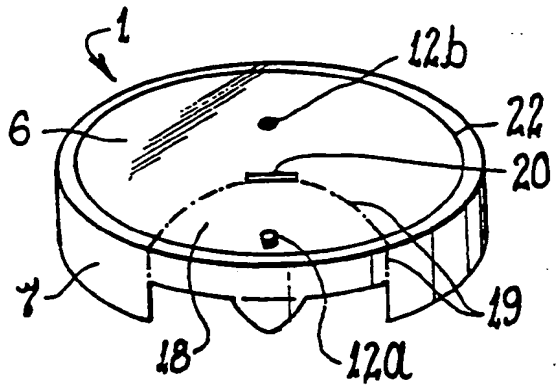

FIG 7

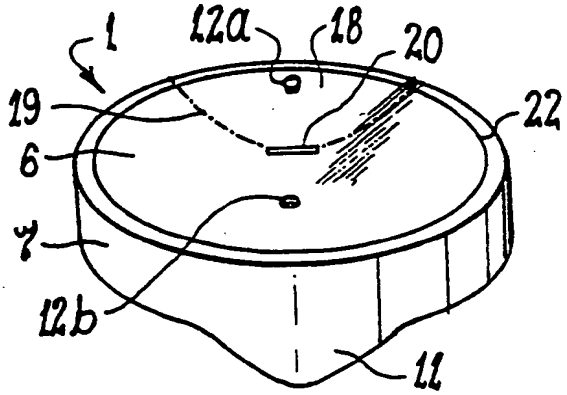

FIG 8

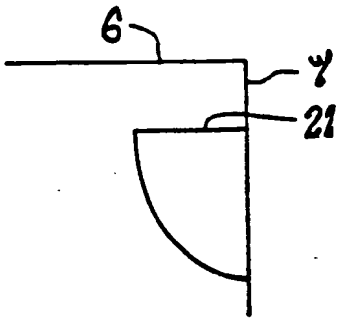

FIG 9a

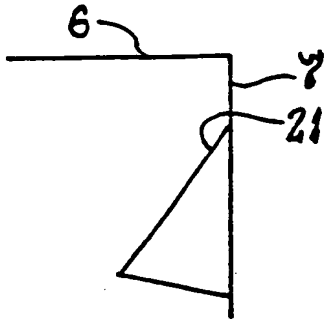

FIG 9b

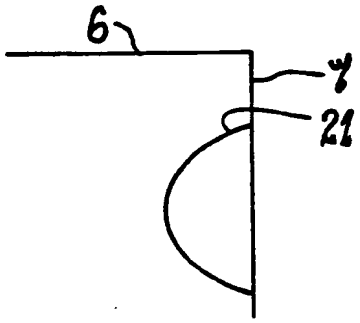

FIG 9c

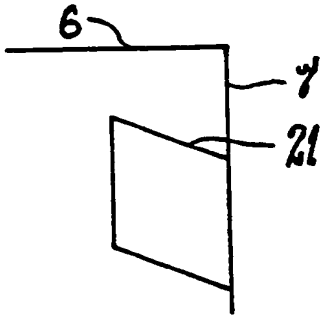

FIG 9d

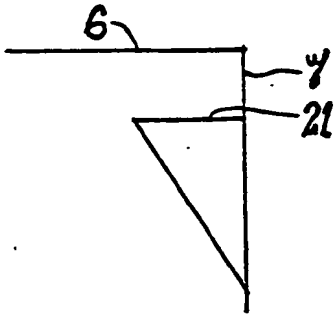

FIG 9e

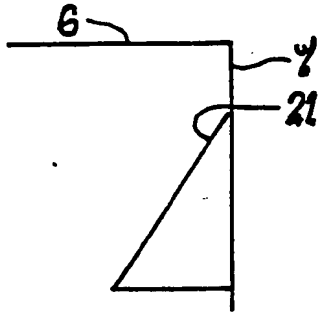

FIG 9f

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU92/00370

A. CLASSIFICATION OF SUBJECT MATTER
Int. Cl.[5] B65D 51/02, 17/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC: B65D 17/00, 41/62, 51/02, 51/18, 51/20.

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
AU: IPC as above
B65D 17/50, 25/52, 47/08, A47G 19/24.

Electronic data base consulted during the international search (name of data base, and where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to Claim No.
X, Y	US, A, 3826400 (CONTINENTAL CAN COMPANY, INC) 30 July 1974 (30.07.74) whole document	1-4 8
X, Y	US, A, 4927048 (ROY T. HOWARD) 22 May 1990 (22.05.90) Page 1, lines 44 to 57; Page 2, line 39 to Page 3, line 7	1-5 8

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier document but published on or after the international filing date
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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
15 October 1992 (15.10.92)	3 Nov 1992 (03.11.92)
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200 WODEN ACT 2606 AUSTRALIA Facsimile No. 06 2853929	Authorized officer R J KIRBY Telephone No. (06) 2832369

Form PCT/ISA/210 (continuation of first sheet (2)) (July 1992) copkiy

INTERNATIONAL SEARCH REPORT

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate of the relevant passages	Relevant to Claim No.
X Y	AU, B, 77653/87 (569236) (SMITH AND NEPHEW PLASTICS (AUSTRALIA) PTY. LTD.) 25 February 1988 (25.02.88) Whole Document	1, 6, 7, 9 8
X, P	AU, B, 56177/90 (PREFERRED CANTOP CORPORATION) 5 December 1991 (05.12.91) Whole Document	1, 6, 7

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member	
US	38265400	CA	974901
US	4927048		
AU	77653/87		
AU	56177/90		

END OF ANNEX